

## “A tiny cog in a large machine”: Digital Taylorism in the Translation Industry

### Abstract

Translators have worked with the assistance of computers for many years, usually translating whole texts, divided into segments but in sequential order. In order to maximise efficiency and inspired by similar moves in the tech industry and predictions for Industry 4.0, large translation companies have begun to break tasks down into smaller chunks and to rigidly define and monitor translation processes. This is particularly true of platform-mediated work, highly collaborative workflows, and multimedia work that requires near-live turnaround times. This article considers such workflows in the context of measures of job satisfaction and discussion of sustainable work systems, proposing that companies prioritise long-term returns and attempt to balance the needs of all stakeholders in a translation process. Translators and translator trainers also have a role to play in achieving this balance.

### Keywords

Translation industry, fair MT, digital Taylorism, scientific management, business ethics, labour sociology, sustainable work systems.

### Introduction

The continuing growth in digital content means that there is more material to be translated than ever before (Moorkens 2017). The complexity of processes by which this translation takes place varies massively. At one extreme of the translation continuum we may have a highly-paid specialist managing and translating a project from start to finish for a direct client; at the other extreme, crowd workers accepting a portion of a project that has been decomposed to many human intelligence tasks involving translation of decontextualized strings of text anonymously via an online platform in return for a micropayment, with many other processes in between. In order to mass-produce translated material while integrating technological innovation, many translation and localisation workflows are becoming increasingly complex. This is particularly true of large language and localisation service providers and crowdsourced translation companies that follow the trend among big technology firms to break large tasks down into small chunks in order to maximise efficiency (Carr 2010: 150).

This harks back to the system of ‘scientific management’, proposed in 1911 by Frederick Winslow Taylor, that revolutionised industrial work processes so that workers, rather than choosing their own work and pace, are monitored and have their tasks arranged so as to increase overall productivity. Taylor’s ‘work system’, sometimes known as Taylorism, has experienced a resurgence in recent years, particularly in the tech industry, where the largest companies appear to believe that, in order to maximise efficiency and to eliminate subjective judgement, outputs must be quantified and workers continually audited. This repopularisation of Taylorism has been variously called neo-Taylorism (Conti and Warner 1994), new Taylorism, or Digital Taylorism (Parenti 2001). The dictums of both Taylorism and Digital Taylorism (DT) advocate workplace surveillance so as to avoid what Taylor (1911) calls ‘soldiering’ (working at a slow pace or procrastinating), but contemporary methods link to widespread discussion of data dispossession and surveillance capitalism (Zuboff 2019).

The adoption of DT in translation and localisation differs to its use in the tech industry. The main difference is that most translators work on a freelance basis, and as such are likely to have less power and agency than direct employees (Abdallah 2010; Moorkens 2017). The employer can save on the costs associated with direct employees such as training, holidays and sick leave, along with office costs such as real estate, light, heat, hardware, software, desks, and seating (Campbell, Watson, and Buchanan 2004). Freelance translators are “reliant on ethical behaviour on the part of their employers” (Moorkens & Rocchi, forthcoming) and are particularly vulnerable to unilateral changes to working conditions when they work exclusively with a single language service provider. By working as a small and interchangeable part within a system of DT, they can be swapped out without any detrimental effect to the system as a whole. This is especially true of crowdsourcing, when no trust relationship has been built between the entity who commissions the task and the person who carries it out. On the other hand, not every worker wants to commit to a single employer or role, and they may prefer to work on small tasks as part of a portfolio career (Mallon 1998). The indications from surveys published previously suggest that the implications of DT from the workers’ perspective are more negative than positive. One respondent to Courtney and Phelan (2019: 108) said that translation is “now more like working on an assembly line”.

This article considers DT in translation in the context of measures of job satisfaction and sustainable work systems. Sustainable work systems focus on long-term sustainability of human, social, and natural resources rather than maximising short-term gains. The aim is for balanced concern for all stakeholders rather than prioritising the needs of those in positions of power (Docherty et al. 2008). Sustainability has long been promoted by the United Nations (UN General Assembly 2015), and the notion of sustainable work systems links to UN Sustainable Development Goal 8 (“sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”), with many commentators advocating zero growth on the grounds that sustainable growth in 2019 is no longer possible (Cronin 2017, Heinberg 2011, Smil 2019).

The following section describes Taylor’s work system proposal in some detail, and some criticisms that arose after it was widely adopted, moving on to DT as practiced currently. Thereafter, I examine applications of DT in the translation industry, in large conglomerates, crowdsourcing scenarios, audiovisual translation, and localisation. The next sections look at measures of job satisfaction, considering the effects of DT on positive and negative indicators of satisfaction, including some qualitative results from recent surveys of translation job satisfaction, after which I introduce work system sustainability. There may be reasons why both employers and translators find the system of DT beneficial, and some external factors, I suggest, affect how the system is imposed and the disparities of power between employer and (usually outsourced) translator. The article ends with some recommendations for achieving a balance of efficiency and sustainability in the translation industry.

## **From Taylorism to Digital Taylorism**

In an influential essay from 1967, Thompson (73) described a time before the clock dictated working hours, when the “work pattern was one of alternate bouts of intense labour and of idleness, wherever men were in control of their own working lives”, adding that the “pattern persists among some self-employed... and provokes the question whether it is not a

"natural" human work-rhythm." The Industrial Revolution changed this work pattern, but it wasn't until Taylor began to publicise his work on scientific management, the main principles of which were published in 1911, that workers began to be organised to maximise efficiency. Taylor suggested that his principles could be applied in organisations of many types and sizes, demonstrating their effectiveness with a number of case studies, and that the application would result in prosperity for both employer and employee.

Taylor was opposed to 'underworking', and union-agreed limitations to individual productivity. He felt that increased overall productivity would lead to lower prices, more demand, and therefore more work. By monitoring each worker, it would be possible to both quantify (and with, bonuses, maximise) productivity, and to identify the "one method and one implement which is quicker and better than any of the rest" (Taylor 1911: 9). Organisation, training, development, and oversight of work would move from worker to management, with the worker having little say in the choice of the single best method for carrying out their work.

In practice, financial benefits did not necessarily accrue to both employers and workers. In addition, by decomposing and documenting work processes so that they were rigidly defined, the work could be carried out by less-skilled workers for less pay, and, potentially, automated. Price cuts that give one company a competitive edge will also tend to propagate throughout an industry, leading to job losses and/or changes of employment practices. For this reason, and due to workers' unhappiness with their reduced role and simplified tasks, the imposition of scientific management met with opposition from labour organisations.

Drury (1915) discusses some contemporary criticisms of scientific management, such as that employees are overworked or turned into automatons, and dismisses them summarily. He does, however, note that it disincentivises collective behaviour, and claims that company owners preferred not to hand control to management experts, and that if they did so, once the initial changes had been implemented, there was a tendency to "drift back into old habits" (Drury 1915: 214). Walker and Guest (1952) offered a longer-term perspective, reporting on interviews with 180 assembly line workers for whom work is repetitive, requiring minimum skill and attention, and the pace of work is mechanically controlled. Their work has been subdivided minutely into tasks for which tools and techniques are rigidly defined. These workers are generally satisfied with pay rates but are otherwise reportedly alienated and uncommitted. Work processes most typical of mass production appear to correlate with employee absenteeism and resignations.

Scientific management (and related Fordist mass production (Jessop 2007) from the 1920s on<sup>1</sup>) assumes that workers are primarily motivated by money and that improved rates of pay will compensate for reduced autonomy and repetitive work. Over time, however, it became clear that workers' motivation was more complex than Taylor had believed. Based on his own research and several replicating studies, Herzberg (originally published in 1967, but reprinted in 1987: 8-9) proposed a "motivation-hygiene theory of job attitudes", identifying intrinsic motivating factors that "were the primary cause for satisfaction" at work, and demotivating or 'hygiene' factors that "were the primary cause of unhappiness on the job". He writes that the "growth or motivator factors that are intrinsic to the job are: achievement,

---

<sup>1</sup> Scientific Management led to Fordist methods of production in subsequent years, which placed less focus on monitoring, instead making use of moulding and automation to replace skilled with non-skilled jobs, along with working more broadly with worker organisations and government in order to turbo-charge capitalism and consumption (Jessop 2007).

recognition for achievement, the work itself, responsibility, and growth or advancement”, whereas the demotivating or “hygiene factors that are extrinsic to the job include: company policy and administration, supervision, interpersonal relationships, working conditions, salary, status, and security” (Herzberg 1987: 9). These extrinsic factors may be effective in producing ‘movement’, if not motivation, due to fear of repercussions. Herzberg’s insights challenge the benefits assumed from Taylorism, although in his 1987 postscript he lamented that the focus on motivating factors in US companies was being lost due to the “pragmatics of worldwide competition” (16). I consider translation work in the context of Herzberg’s theory in a section to follow.

Postman (1992: 90) saw the influence of Taylor appearing in the digital era and explicitly linked deterministic thinking to Taylorism, critiquing “beliefs that the primary, if not the only, goal of human labour and thought is efficiency; that technical calculation is in all respects superior to human judgement”. The company Carr (2012: 150) most identifies with an algorithmic striving for efficiency is Google, believing that what “Taylor did for the work of the hand, Google is doing for the work of the mind”. Parenti (2001: np) provides examples of the application of surveillance in the workplace to achieve this efficiency, opining that the internet has created “both the reasons and the means for surveillance”. This is the key difference between Taylorism and DT: jobs are standardised, methods documented, but now new technologies enable more varied and invasive monitoring and surveillance of workers to ensure that their role is carried out as expected, using devices that can “control and extract value from creative and knowledge work as well as physical labour in more precise, quantified ways” (Moore and Robinson 2016: 2781). For example, ‘nudge management’ is the practice of making small changes based on behavioural and psychological studies to optimise efficient behaviours (Ebert and Frebichler 2017). Frischmann and Selinger (2018: 79) discuss contract creep, nudge creep, and surveillance creep, where limits are stretched iteratively so that control and extractivism gradually but imperceptibly become more extreme, and describe these as “fundamental parts of modern Taylorism”.

A well-performing employee in a scientifically managed factory should, in theory, receive a bonus or premium in salary, and this may be the case for valuable employees working for tech giants who see only the positive side of teamwork. However, the bonus for the micromanaged lower-tier or temp employee is to keep their job.<sup>2</sup> Non-performing parts can easily be swapped out, particularly when not directly employed. Technology workers in DT often lack visibility of the technology they are contributing to and its eventual use, meaning that they cannot exercise their own ethical judgement or what Popper (1970) called their moral responsibility. Weizenbaum (1986: np), in response to military use of artificial intelligence, highlighted the importance of asking the questions “What is the final application and use of the products of my work?” and “Am I content or ashamed to have contributed to this use?”. Workers who are unable to answer these questions risk contributing to projects to which they are ideologically opposed. This was one of the main complaints of the 20,000 employees involved in the Google walkout in 2018 and continues to cause employee unrest that has spread beyond the company to Amazon and Microsoft (Scheiber and Conger 2020). This concern could equally apply to researchers contributing to machine translation (MT)

---

<sup>2</sup> Wakabayashi (2019) reports that most workers for Google worldwide are temps and contractors and subject to different working conditions to direct employees.

systems or translators working on a decomposed section of a large project. The following section looks at applications of DT in the translation industry.

### **Digital Taylorism and the translation industry**

Most translators worldwide work on a freelance basis. This was noted as early as 1976 by Tinsley (for the USA) and more recently by Pym et al. (2012). Jemielity (2018) and others have highlighted the isolation of translators, even within a company. As a result, it has been difficult for them to organise collectively, and thus it is easy for a company that has decomposed projects and restricted the scope of work to swap one translator for another without any real repercussions. This is particularly true of remote workers contracted via a crowd translation platform, such as Lionbridge GeoWorkz (as mentioned in *Ghost Work* by Gray and Suri (2019)), Unbabel, Stepes, or one of the many general-purpose crowd portals. The tools used for translation and localisation processes are increasingly cloud-based, permitting monitoring of work in real time and in logs. Garcia (2017) explains that this may be used to profile translators by speed, quality, and translation type, and that TAUS (the Translation Automation User Society) has proposed creating an 'efficiency score', using words and edits per hour. Góis and Martins (2019) attempt this, using keystroke data from 332 post-editors to predict future post-editing time.

A series of acquisitions within the translation and interpreting industry has meant that the largest companies have cemented their positions, with many becoming publicly-traded conglomerates. Graham (2019) tracked 82 acquisitions of translation and interpreting companies between 2016 and September of 2019. Kronenberg (2018) created a timeline of acquisitions by the company RWS, with notes of unilateral changes to payment conditions and rates imposed concurrently with strong stock market performance. The imposition of new conditions and rates by RWS and Lionbridge (Llorens 2010) demonstrates the commodification of translation and a lack of care about motivation and satisfaction for translators. Bauman (2000: 151) notes the likelihood of stock exchanges and boards of management "to reward all steps 'in the right direction' of disengagement, like 'slimming down', 'downsizing' and 'hiving off', while punishing just as promptly any news of staff expansion, increased employment and the company being 'bogged down' in costly long-term projects".

As such, it is little surprise to see translation jobs subdivided into many small tasks and an increase in translator monitoring. This combination of subdivision of tasks and the integration of technology built on previously gathered data and serviced via the cloud (as is sometimes called Industry 4.0; Caruso 2018) massively complicates translation workflows, necessitating a host of new roles. A check on the Lionbridge website on October 18<sup>th</sup> 2019 shows 18 roles that operate within a translation production network including QA, checking, rating, content preparation; on the same date Transperfect advertised openings for 34 different roles (excluding accounts, management and marketing) including various types of linguists, project managers and coordinators, language data analysts and revisers.<sup>3</sup> A LinkedIn search by Bond (2018a) identified over 600 different job titles in language service providers. These roles offer translators opportunities to do highly-specified tasks within a translation production network. On the other hand, as more people become involved in projects, often as freelancers with a single point of contact within the translation company, this can erode

---

<sup>3</sup> These are (by far) the two largest Language Service Providers in 2019 according to CSA Research (2019) and Nimdzi (Dranch, Beninatto and Johnson 2019).

trust and also lead to the 'problem of many hands', when a single person cannot be identified or held responsible when a problem occurs (Timmermans et al. 2010).

Translators have reported that translation jobs are becoming smaller. According to O'Brien (2012: 114), "in some domains, the notion of a text, with a beginning, middle and end, has changed radically", due in part to "the way in which information is now produced". This has been corroborated by translation companies such as Alpha CRC, who reported that "the average size of translation tasks has fallen dramatically, even though overall volumes are rising", which, in combination with technology and agile workflows, is leading to a "degraded environment for the translator" (Bond 2018b). Decomposition of multilingual projects is becoming increasingly common for multimedia content due to the expectation of fast turnaround times. In order to make the programme *Chelsea* available to "an audience in over 190 countries simultaneously less than 34 hours after each taping", Netflix "slice each and every video source file into small chunks" to aid processing, before sending the slices to over 200 translators (Roettgers 2016). Iyuno Media (who received venture capital funding from Softbank Ventures in 2018 (Bond 2019)) offer an astonishing two-hour turnaround for translation of 45-minute premium Korean dramas into English, breaking content down into 15-minute chunks and translating with the aid of wikis and neural MT on their own proprietary cloud platform (Puttock 2018). Pidchamook (forthcoming) has documented similar work processes for fast turnaround in the Thai over-the-top (OTT) media industry, where subtitlers await 15-minute clips by email, spot and translate quickly, then send them to a project manager to reassemble and make consistent. Georgakopolou (2019: np) associates projections of doubling subscriber revenue for OTT media over the next five years with increasing requests for "near-live turnaround times", collaborative workflows, and crowdsourcing in localisation processes.

The nature of software localisation, which involves "translating text embedded in various parts of the software interface" (Bass 2006: 78), means that understanding of context can be a problem. As more software is now made available 'as a service', online or via apps, a constant update cycle has further decontextualized content for translation. More and more software and games localisation involves high-pressure work on decomposed materials distributed among a global team, following an agile software development cycle, in order to turn around regular updates. Agile methods involve prioritisation of features, which are then developed over 'sprints', usually of one or two weeks. For localisation teams, these "rapid iterations" create more incremental updates, requiring them to "remain flexible throughout in order to deal with a heavily fragmented supply of assets, and to be ready to absorb text updates by enlarging teams and working two or three shifts a day during crunch time" (Bernal-Merino 2013: 285).

Again, the overall purpose of the project may be obscured within such a fragmented workflow, requiring trust on the part of the translator, whereas increased monitoring evinces a lack of trust on the part of the translation buyer or employer. Pym (2012) believes that a job that requires a high-quality publishable text means that the buyer must put more trust in the translator, whereas a lower-quality, fit-for-purpose translation requires less trust. Geographic distance and the small number of intermediaries between translator and buyer make it difficult to build a trust relationship within a translation production network (Abdallah and Koskinen 2007). This is especially true for networks in which project management is automated (Sakamoto 2018) and in crowdsourcing scenarios. Building an empathetic, 'identification-based' trust relationship requires long personal interaction (Olohan and Davitti

2015). Without trust, Chesterman (1997: 182) believes “the profession would collapse, and so would its practice”.

Garcia (2017: 60) discusses Taylorism in translation crowdsourcing, using the internet as a “virtual facility that allows independent contractors to perform piece work at a venue of their choosing, whilst remaining under perfect, big-data encoded supervision”. He continues that, in order to get paid an average wage, crowdworkers will have to maintain a perfect reputation and accept most work offered to them. As a result, recent research has found successful crowd workers (on general crowd platforms) subcontracting work to others for a lower rate (Wood et al. 2019). The difficulties of establishing trust relationships, allied with the benefits of translation and user activity data gathering, means that crowd translation providers who want to maximise their resources are likely to have highly complex workflows. To take a high-profile, Translation Industry 4.0 example, Unbabel’s platform uses MT for initial translation, followed by automatic quality estimation (QE). Depending on QE results, sections of text are distributed to the crowd for MT post-editing on a piecemeal basis. These are often time-dependent real-time customer support interactions. They also use internal human terminologists, ‘translation analysts’, ‘linguistic annotators’, and external Natural Language Processing steps for spellcheck, syntax parsing, and word alignment (Moniz 2019, Silva 2019). Unbabel are unusual in that they are very well resourced, having received US\$91m in external funding, although this brings its own pressures, as venture capital investors typically expect a high return of investment over a small number of years (Zider 1998), with Series C funding expected to help a successful company to scale.

According to Caruso (2018: 387), companies that use digital crowds have had “limited success” with increasing employee commitment in the past, particularly as a focus on short-term returns and shareholder value have put “pressure on employment and working conditions, downsizing staffing levels, intensifying work, cutting cost and reducing employment security, in particular in higher wage countries”. The use of reputation scores and automated tests on a crowd platform in place of interpersonal trust may successfully weed out workers who try to game the system by contributing work that is malicious, shoddy, or random, but particularly when reputational scores have not been established, workers on many platforms may have work rejected or their profile terminated without explanation or compensation. When a client demonstrates an absence of trust for the worker, particularly within a short-term relationship mediated solely via a platform, the worker is made aware that they are disposable, and “so they see little point in developing attachment or commitment to their jobs” (Bauman 2000: 152).

Working via an online platform or portal has also become commonplace for many freelance translators, with 89% of 6925 respondents to Pielmeier and O’Mara (2020) saying that they use them. 69% of respondents said that these portals streamline their work, but 56% said that they depersonalise the client relationship. The use of such portals may not present the same level of risk as the general crowd platforms, but nonetheless lessen the translator’s agency. Cloud-based tools may be discontinued with little notice (like Google Translator Toolkit was in December of 2019), have terms changed following shareholder pressure or acquisition (as happened with Lilt in 2018) or made unavailable in one region for reasons beyond an individual’s control (as happened to Adobe product users in Venezuela in October of 2019; Lee 2019). For management, cloud-based tools allow monitoring and surveillance, but they also enable data gathering to address the weak spot in Taylorism: human resource management. As “subjective judgment is not rigorous or trustworthy as a

way to assess talent or create human resources policies”, “large pools of objective, generally quantitative data” may be accumulated to guide decision-making (Bodie et al. 2017: 964). Ajunwa (forthcoming) highlights the risk that this data may be sold and notes how automated hiring decisions based on such data is likely to amplify rather than remove existing bias.

This does not remove the problem of motivating workers who do not see the full picture of what they are contributing to. Even the most worthy or beautiful text, when decomposed, is likely to seem meaningless. This is doubtless particularly so for the types of text translated via crowd platforms. Where games localisation teams previously received a physical copy of the release that they had contributed to, repetitive work on minor game updates has no obvious endpoint. In the following section, we consider the effect of DT on measures of job satisfaction.

### **Motivation and job satisfaction**

Herzberg’s motivation-hygiene model of job satisfaction from 1959 identified factors that produce motivation or grudging movement at work. Despite this, Kovach still found a mismatch between what management and workers felt were motivating factors in his 1987 meta-analysis. Management and supervisors believed that wages were most important, whereas workers said that interesting work and appreciation of work done were most important (Kovach 1987). DT in the translation industry, coupled with the prevalence of freelance work, may exacerbate several demotivating factors such as interpersonal relationships, working conditions, salary, status, and security. Kovach (1987) likens these to basic needs rather than self-fulfilment needs. Macey et al. (2011) consider these subordinate to positive motivation factors, suggesting that a worker who likes their job is unlikely to move to a job they dislike for better pay.

DT in translation offers limited opportunities for Herzberg’s motivating factors, particularly for freelance workers. Working with decomposed sections of text or portions of game updates brings little sense of achievement and thus no recognition for achievement. Removing segments of text from their context limits the abilities of translators to use their key linguistic and intratextual skills. Some companies have tried to build in motivating factors by creating a hierarchy for career advancement for in-house workers and celebrating the success of a randomly-chosen number of product updates. For freelance workers the lack of a defined career path is not a direct result of DT, but DT mitigates against gaining expertise or assuming authority by strictly limiting the scope of work and dictating how the work is to be done. Rodríguez-Castro (2016) developed an instrument for measuring translator satisfaction based on Herzberg’s two-factor model of extrinsic and intrinsic motivation. The elements that she found ‘crucial’ for task satisfaction for translators were “successful completion of projects, ability to perform a wide variety of tasks, and intrinsic pride in their work”, the first two of which in particular are negatively affected by DT in translation (Rodríguez-Castro 2016: 223).

Krifa and the Happiness Institute propose seven factors that contribute to job satisfaction. The effects of these are not independent of one another. For example, the most important factor, particularly for women, is meaning, “spending your working life on something meaningful for yourself and others and being able to see that your contribution in particular is of value” (Krifa/Happiness Institute 2019: 12). The importance of meaning is increased when surrounded by a number of supportive colleagues. Next-most important is mastery – Shreve (2009: 265) related translation expertise to “an increased capacity to recognize and



represent the problems of translation and an increased ability to effectively resolve those problems". However, mastery is difficult to achieve when carrying out varied decomposed and non-challenging tasks. Furthermore, Sennett (1998: 72) observed that "people identify with tasks which challenge them, tasks which are difficult". The other satisfaction factors proposed by Krifa/Happiness Institute (2019) are, in order of weighting, balance, leadership, influence, achievements, and colleagues. If we consider how each of these are affected by DT in translation, it is difficult to see how work on decomposed portions of a project could contribute to job satisfaction, other than perhaps for balance. The Krifa/Happiness Institute Report (2019: 22) discusses balance "between the number of tasks you have and the amount of time you have to perform them", along with work-life balance. Pym et al. (2012) highlight the prevalence of paraprofessional translators, who translate as part of their role, as well as the largely female translation workforce globally. Respondents to Courtney and Phelan's survey (2019: 109) felt that "being self-employed has allowed them to spend more time raising children or relocate to another country with their partner", thus increasing their job satisfaction. Rubery (2013), however, discusses how stereotypical notions of female carers may contribute to women's lower likelihood to have job security, and the result that women tend to suffer more in an economic downturn. The Krifa/Happiness Institute (2019) also report that, based on their Danish studies, women tend to suffer disproportionate work-related stress.

Courtney and Phelan (2019: 108) report the precarity of freelance translation work as a major stress-inducing factor, along with poor treatment from agencies and clients that, according to one respondent, "treat them like robots". Looking at the results of a survey of Irish translators carried out in 2016, we can see comments relating to DT in responses to questions about job satisfaction. The survey had 99 participants, although many did not complete all sections. These were a mix of public servants, freelance and self-employed translators, and company owners, all working in Irish-English translation. A portion of these results and the full methodology are presented in Moorkens (2020). When asked how the role of a translator in 2016 differed from previous years, one full-time freelance translator participant responded that "if working for large agencies, we are now just a tiny cog in a large machine". Most answers focused on technology and rates, but seven (of 57) responses mentioned the increasing number of tasks translators were being asked to do as part of complex workflows, such as "page setting, terminology work, QA etc.". 22 of 54 participants who responded to a question about the main threat to the industry wrote about the behaviour of 'large translation companies'. One part-time freelancer complained that "more and more work is going through large translation companies and this has caused a lowering of rates paid and standards implemented. Another full-time freelancer feared "agencies aggressively lowering rates and winning huge contracts so they can corner the market and pressure translators into accepting ridiculous rates". Comparative job satisfaction analyses in Moorkens (2020) report that freelance translators appear to have a lower sense of purpose from their work and feel more isolated than directly employed company and public service translators. Although English-Irish is not a major, nor a highly-technologized language pair, these survey results do not seem to be outliers.

In a large-scale survey carried out by Pielmeier and O'Mara (2020), freelance translators and interpreters responded to questions about what they liked and disliked about their profession. The positive aspects bear little relation to factors that contribute to motivation and satisfaction as discussed previously. 91% of 6003 freelancers said that they like the flexibility of hours offered by their profession, but only 43% said that it gave them a sense of

purpose. The negative aspects are, however, similar to the extrinsic factors that Herzberg suggests are likely to cause dissatisfaction: fluctuating income, irregular work, lack of benefits, and stress (Pielmeier and O'Mara 2020). There are opinions both positive and negative about the state of the translation industry to be found in translator surveys, but the fact that job satisfaction and motivation factors are not perceived by many translators across several studies is a little alarming and raises questions about the sustainability of the translation industry.

### **Work system sustainability**

Research on translator status, agency, and job satisfaction (such as Dam and Zethsen 2008; Abdallah 2010; Ruokonen 2013) point to an unbalanced system with disparities of power. Docherty et al. (2008: 4) believe that a work system must satisfy the needs of many rather than few stakeholders, and that instead of focusing exclusively on "short-term, static efficiencies such as productivity and profitability; we must also focus on long-term, dynamic efficiencies such as learning and innovation". For a work system to be sustainable, it needs to "attain a just balance in development" between all stakeholders and long- and short-term needs (Docherty et al. 2008: 4). This will require continual rebalancing and adjustment following certain principles, such as regeneration of human, social, material, and natural resources utilised and non-exploitation of one resource over another, including external resources. The system should aim to give back to society rather than exploit it as a resource. A sustainable work system does not prioritise one stakeholder over another.

This is not a particularly controversial assertion, as business and business ethics literature has moved on from the focus solely on profit from the 1970s (e.g. Friedman 1970) to Freeman's (1984) stakeholder approach, whereby the needs of all parties connected to a company should be considered, although the perception remains that societal concerns exert a drag on business (Hart 2007). Elkington (1997) popularised the idea of the 'Triple Bottom Line' of people, planet, and profit, promoting a sustainable balance between human and social resources and with ecological and economic resources. Similarly, De George (2014: 502) highlighted the need to "respect the rights of employees, consumers, and society in general". The additional aspect in a sustainable work system is consideration of future generations, restricting activities that will delimit their agency or satisfaction of their needs. In practice, the balance may be tilted towards the profit motive in many businesses, but there is little sign of the consideration of corporate-social responsibility or sustainability in the translation industry, particularly in larger companies that are acquisition-hungry and must prioritise short-term returns to shareholders and investors. Zink (2014: 127), for example, suggests that outsourcing, particularly to "countries with less pay and without "restrictions" of work and environmental laws", as may happen in unrestricted scenarios such as crowdsourcing, is not compatible with sustainable work.

The concept of sustainability, as used by the UN, was initially introduced with regard to the environment, but has more recently broadened to include Sustainable Development Goal 8, which is to promote "sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all" (UN General Assembly 2015). The International Labour Organisation's related definition of Decent Work highlights the need for

'productive' work, but otherwise focuses on hygiene rather than motivating factors such as adequate earnings and social security, stable and secure work, and social dialogue between representatives of workers and employers (Ferraro *et al.* 2015). Docherty *et al.* (2008), however, are more concerned with motivating factors and stress that the individual worker should have the opportunity to "develop as a person, a professional, and a member of a society through work experiences". Moving to a sustainable work system does not imply stasis, but rather the establishment of "a dynamic flexibility" to maximise sustainability; according to Docherty *et al.* (2008: 8), economic and human resource sustainability is foundational for "social development and the sustainability of whole societies" and is indivisible from environmental sustainability. Cronin (2017: 105) has critiqued this "dual form of extractivism" of human and non-human resources with "little concern for those who find themselves in the 'sacrifice zones' of depletion."

For knowledge workers such as translators, Brödner (2009: 56) remarks that "increased work demands may cause less stress if a working person has control over the working process". His suggestions for making knowledge work more sustainable are unlikely to be part of freelance translators' current reality, especially those working in DT processes at the 'bulk' end of the market for large agencies, and will definitely not be familiar to crowdworkers. For example, he suggests that workers participate in a "cyclic and evolutionary procedure of continuous reflection and work redesign during which improvements are regularly explored, reflected upon, and evaluated" (Brödner 2009: 66). Based on these reflections plus health and stress monitoring, workers may choose to moderate workloads to avoid a mismatch of demands and resources, building in recreational time after stressful periods to avoid burnout. The problem here is that when working life is "saturated with uncertainty" (Bauman 2000: 147), long-term thinking becomes less likely. Thus it becomes difficult for the freelancer to turn down work offered via the agency or platform, as project-oriented work tends towards "insecurity and periods of involuntary unemployment" (Dachs 2018: 5), even if accepting such work perpetuates an unsustainable ecosystem.

### **In summary: Aiming for balance**

The success of neoliberal discourse has been such that financialisation – maximisation of shareholder value – and striving for efficiency have become normalised. This culture will be difficult to change, as consumers demand ever-more speed in production and fast turnaround times, especially for multimedia content. A company that weans itself away from an army of unpaid workers-in-waiting, ready to produce translation at speed and low cost, is liable to make itself uncompetitive in the sector of the market that prioritises cost and speed over quality. On the other hand, prioritisation of efficiency above all else is likely to result in unbalanced levels of satisfaction among all stakeholders, leading to a less sustainable organisation. As work globally becomes increasingly casual and project-based as part of what is sometimes termed Post-Fordism (Jessop 2007), workers too have become less committal as "there is little chance for mutual loyalty and commitment to sprout and take root" (Bauman 2000: 148).

Efficiency is also internalised as the basis for everyday personal decisions, as we try to "multitask better and faster in a Taylor-inspired hunt for ever-greater heights of efficiency" (Jackson 2018: 98). Many authors have noted our constant technologized distractedness, along with a lowering of capacity to take on tasks that require deep concentration, such as a

long, uninterrupted translation task (Carr 2011, Jackson 2018). Gazzaley and Rosen (2016: 108), for example, found that the average smartphone user picks up their device 27 times a day. DT or project-based work may suit those who prefer variety of work as part of a portfolio career or work remotely for second job or around carer commitments (Mallon 1998). It may also be argued that microtasks are part of everyday life for many of us due to ubiquitous technology. A study of Sydney office workers by Wajcman (2015: 100) found that they had an average of 88 'work episodes' per day, of an average duration of three minutes, and with most changes or interruptions (65%) initiated by the workers themselves.

For many freelance translators, flexibility is a benefit rather than a problem. Courtney and Phelan (2019) and Pielmeier and O'Mara (2020) report flexibility as a source of job satisfaction, especially for those that enjoy high levels of autonomy. This autonomy is important for well-being, as not all texts can be meaningful and important. Graeber (2018: 150) reports that most information workers appear to feel that, were their jobs to disappear, it would make "very little difference to the world". The problem is that DT removes that autonomy, potentially leaving a repetitive role of relatively meaningless, rigidly defined and unsatisfactory tasks. This process is happening in many fields of work other than translation, as technology for monitoring and automated decision-making becomes more powerful.

In addition, Jessop (2007) and Dachs (2018: 4) report a trend of job polarisation, in which "demand for middle-skilled people has decreased, while demand for both high-skilled and low-skilled (paid accordingly) ones has risen". The demand for translation worldwide is reportedly growing (CSA Research 2019, Dranch, Beninatto and Johnson 2019), but a good deal of translation work is at the lower end of the market, where automation will be used where possible and cost is a major selling point. In their work defining levels of automation, Parasuraman et al. (2000: 291) propose that poorly-designed automation could result in reduced system awareness, placing too much trust in the machine, and skill degradation, whereby if a function is "consistently performed by automation, there will come a time when the human operator will not be as skilled in performing that function."

Durban (2011), Jemielity (2018) and others recommend specialisation at the high end of the translation market, where, for those with the ability and network, they report consistently strong prices and job satisfaction. This is one obvious solution for some translators, although the hollowing out of the middle section of the market may make it more difficult to climb to the high end. There are also plenty of agencies who do not compete solely on cost and build long-term trust relationships with translators and clients. At the very least, it makes sense for translators to diversify their agencies or clients so as to protect themselves from unilateral action or work practices that are demotivating and unsatisfactory. Working together where possible is also important, even if project-based work mitigates against it, as you "cannot have solidarity between fragments of time" (Berardi 2012: np). Even with collective action, one stakeholder group will struggle to change the ecosystem.

Policymakers are aware of the issues with contingent, freelance, and crowd workers in general, their lack of support from unions, and antitrust problems with collective action (De Stefano and Aloisi 2018). A large-scale move towards empowering workers should help to tip the balance towards more sustainable work systems for translators at the lower end of the market. Even without such a change, however, translation agencies, and particularly large language service providers need to consider sustainability broadly in their work systems, to build it into their relationships with translators, and to contribute to national and international translator organisations who can advocate for translators, increase their visibility, offer counselling, advice, and training opportunities for self-actualisation and professional development.

There is also an onus on translator trainers to introduce business ethics and to highlight contemporary work practices in order to prepare students for future roles as both translators and translation industry workers. Those that work within large companies may sooner or later become gatekeepers and makers of decisions about work practices and data harvesting that will impact many other stakeholders within the translation industry. The wider context of environmental sustainability and climate change (as discussed by Cronin (2017)) needs to be kept in mind in any discussion of work system sustainability, and decision-making requires cognisance of the consumption cost of translation technology and automation.

In closing, a broad conceptualisation of sustainability needs to be at the forefront of thinking at all levels within the translation ecosystem. Responsible and ethical use of Taylor-influenced methods will require a balancing of efficiency with the need to move away from extractivism for all resources and to consider long-term value. This necessitates translation employers bearing some responsibility for the satisfaction and motivation of workers, as a sustainable industry will ultimately benefit all stakeholders.

## Acknowledgements

This work was supported by the ADAPT Centre for Digital Content Technology at Dublin City University, funded under the Science Foundation Ireland Research Centres Programme (Grant 13/RC/2106) and is cofunded under the European Regional Development Fund.

I would like to extend my thanks to the editors and anonymous reviewers of this article for their positive comments and helpful suggestions.

## References

- Abdallah, Kristiina. 2010. "Translator's Agency in Production Networks." In *Translator's Agency*, edited by Tuija Kinnunen and Kaisa Koskinen, 11–46. Tampere: Tampere University Press.
- Abdallah, Kristiina, and Kaisa Koskinen. 2007. "Managing Trust: Translating and the Network Economy." *Meta: Journal des traducteurs* 52 (4): 673–687.
- Ajunwa, Ifeoma. Forthcoming. "The Paradox of Automation as Anti-Bias Intervention." *Cardozo Law Review*. <https://ssrn.com/abstract=2746078>
- Bass, Scott. 2006. "Quality in the Real World." In *Perspectives on Localization*, edited by Keiran Dunne, 69–96. Amsterdam/Philadelphia: John Benjamins
- Bauman, Zygmunt. 2000. *Liquid modernity*. Cambridge: Polity.
- Berardi, Franco 'Bifo'. 2012. "Semio-capital and the problem of solidarity." Panel contribution to 'We Have Our Own Concept of Time and Motion', organized by Auto Italia in collaboration with Federico Campagna, Huw Lemmey, Michael Oswell and Charlie Woolley, August 2011. <https://libcom.org/book/export/html/45057>
- Bernal-Merino, Miguel Ángel. 2013. *The Localisation of Video Games*. PhD thesis, Imperial College, London.
- Bodie, Matthew T., Miriam A. Cherry, Marcia L. McCormick, Jintong Tang. 2016. "The Law and Policy of People Analytics." *University of Colorado Law Review* 88(4), 961-1042.

Bond, Esther. 2018a. "The Stunning Variety of Job Titles in the Language Industry." *Slator*. Accessed December 27 2019. <https://slator.com/features/the-stunning-variety-of-job-titles-in-the-language-industry/>

Bond, Esther. 2018b. "Alpha Rebounds from Losses, Says Tech May Degrade Environment for Translators." *Slator*. Accessed December 27 2019. <https://slator.com/financial-results/alpha-rebounds-from-losses-says-tech-may-degrade-environment-for-translators/>

Bond, Esther. 2019. "IYUNO Media Group and BTI Studios Merge in Deal That Will Reshape Media Localization." *Slator*. Accessed November 12 2019. <https://slator.com/ma-and-funding/iyuno-media-group-and-bti-studios-merge-in-deal-that-will-reshape-media-localization/>

Brödner, Peter. 2009. "Sustainability in knowledge-based companies." In *Creating Sustainable Work Systems: Developing Social Sustainability*, edited by Peter Docherty, Mari Kira, A. B. (Rami) Shari, 53-69. Abingdon: Routledge.

Campbell, Iain, Ian Watson, John Buchanan. 2004. "Temporary agency work in Australia (Part I)." In *International perspectives on temporary work*, edited by John Burgess, Julia Connell, 129–144. Abingdon: Routledge.

Carr, Nicholas. 2010. *The Shallows*. London: Atlantic Books.

Caruso, Loris. 2018. "Digital innovation and the fourth industrial revolution: epochal social changes?" *AI & Society* 33, 379–392.

Chesterman, Andrew. 1997. *Memes of Translation: The Spread of Ideas in Translation Theory*. Amsterdam: John Benjamins.

Conti, Robert F., Malcolm Warner. 1994. "Taylorism, teams and technology in 'reengineering' work-organization." *New Technology, Work and Employment* 9(2), 93-102.

Courtney, Jennifer, Mary Phelan. 2019. "Translators' experiences of occupational stress and job satisfaction." *Translation and Interpreting* 11(1), 100-113.

Cronin, Michael. 2017. *Eco-translation: Translation and Ecology in the Age of the Anthropocene*. Abingdon: Routledge.

CSA Research. 2019. The Largest Language Service Providers: 2019. Accessed September 6 2019. <https://csa-research.com/More/Global-Market-Study/Top-100-LSPs>

Dachs, Bernhard. 2018. *The impact of new technologies on the labour market and the social economy*. Brussels: European Parliament's Science and Technology Options Assessment (STOA).

Dam, Helle V., Katherine K. Zethsen. 2008. "Translator status – a study of Danish company translators." *The Translator* 14(1), 71–96.

De George, Richard T. 2014. *Business Ethics (7th ed.)*. Essex: Pearson.

De Stefano, Valerio and Aloisi, Antonio. 2018. "Fundamental Labour Rights, Platform Work and Human-Rights Protection of Non-Standard Workers." In *Research Handbook on Labour, Business and Human Rights Law*, edited by Janice R. Bellace and Beryl ter Haar, 359-379. Cheltenham: Edward Elgar Publishing.

- Docherty, Peter, Mari Kira, A. B. (Rami) Shari. 2008. "What the world needs now is sustainable work systems". In *Creating Sustainable Work Systems: Developing Social Sustainability*, edited by Peter Docherty, Mari Kira, A. B. (Rami) Shari, 1-22. Abingdon: Routledge.
- Dranch, Konstantin, Renato Beninatto, and Tucker Johnson. 2019. "Nimdzi 100." nimdzi Market Reports. Accessed September 6 2019. <https://www.nimdzi.com/2019-nimdzi-100/>
- Drury, Horace Bookwalter. 1915. *Scientific management; a history and criticism*. PhD thesis, Columbia University. <https://archive.org/details/scientificmanage00drurrich/page/n5>
- Durban, Chris. 2011. *Translation: Getting It Right. A Guide to Buying Translation*. Virginia: American Translators Association. [https://www.atanet.org/publications/getting\\_it\\_right.php](https://www.atanet.org/publications/getting_it_right.php).
- Ebert, Philip, Wolfgang Frebichler. 2017. "Nudge management: applying behavioural science to increase knowledge worker productivity." *Journal of Organization Design* 6:4. <https://jorgdesign.springeropen.com/articles/10.1186/s41469-017-0014-1>
- Elkington, John. 1999. "Triple bottom-line reporting: Looking for balance." *Australian CPA* 69(2), 18 – 22.
- Ferraro, Tânia, Leonor Pais, Nuno Rebelo Dos Santos. 2015. "Decent Work: An Aim for All Made by All." *International Journal of Social Sciences* IV (3): 30–42. <https://doi.org/10.20472/SS2015.4.3.003>.
- Freeman, R. Edward. 1984. *Strategic Management: A Stakeholder Approach*. Boston: Pitman.
- Friedman, Milton. 1970. "The Social Responsibility of Business Is to Increase Its Profits." *The New York Times Magazine*, September 13, 1970.
- Frischmann, Brett and Evan Selinger. 2018. *Re-Engineering Humanity*. Cambridge: Cambridge University Press.
- Garcia, Ignacio. 2017. "Translating in the Cloud Age: Online Marketplaces." *Hermes* 56, 59-70.
- Gazzaley, Adam, Larry D. Rosen. 2016. *The distracted mind: Ancient brains in a high-tech world*. Boston: MIT Press.
- Georgakopolou, Panayota. 2019. "The future of localisation is audiovisual." In *ITI research e-book: Ethics and Machines in an Era of New Technologies*, edited by Sarah Bawa-Mason. London: Institute of Translation and Interpreting.
- Góis, António, André F. T. Martins. 2019. "Translator2Vec: Understanding and Representing Human Post-Editors." Paper presented at MT Summit 2019, Dublin. <https://arxiv.org/abs/1907.10362>
- Graeber, David. 2018. *Bullshit Jobs: A Theory*. New York: Simon & Schuster.
- Graham, Dominic. 2019. "Future of the deal: Macro level look at M&A." Paper presented at ATC Language Industry Summit, September 2019.
- Gray, Mary L., Siddharth Suri. 2019. *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass*. Boston: Houghton Mifflin Harcourt

- Hart, Stuart L. 2007. *Capitalism at the Crossroads*. Philadelphia, PA: Wharton School of Finance Press.
- Heinberg, Richard. 2011. *The End of Growth: Adapting to Our New Economic Reality*. British Columbia: New Society Publishers.
- Herzberg, Frederik. 1959. *The Motivation to Work*. New York: John Wiley & Sons.
- Herzberg, Frederik. 1987. "One more time: How do you motivate employees?" *Harvard Business Review*, Reprint 87507.
- Jackson, Maggie. 2018. *Distracted: Reclaiming Our Focus in a World of Lost Attention*. New York: Prometheus.
- Jemielity, David. 2018. "Translation in intercultural business and economic environments." In *The Routledge Handbook of Translation and Culture*, edited by Sue-Ann Harding and Ovidi Carbondell Cortés, 533-557. Abingdon: Routledge.
- Jessop, Bob. 2007. "Fordism and Post-Fordism." In *Encyclopedia of Governance*, edited by Mark Bevir, 314-315. California: Sage.
- Kovach, Kenneth A. 1987. "What Motivates Employees? Workers and Supervisors Give Different Answers." *Business Horizons* 30(5), 58-65.
- Krifa/Happiness Research Institute. 2019. *Job satisfaction index 2015 (Report)*. Copenhagen: Happiness Research Institute.
- Kronenberg, Kenneth. 2018. "A Timeline of RWS Acquisitions." Accessed September 15 2019. [http://www.kfkronenberg.com/Timeline\\_of\\_RWS\\_acquisitions.doc](http://www.kfkronenberg.com/Timeline_of_RWS_acquisitions.doc).
- Lee, Dami. 2019. "Adobe is cutting off users in Venezuela due to US sanctions." The Verge. Accessed October 24 2019. <https://www.theverge.com/2019/10/7/20904030/adobe-venezuela-photoshop-behance-us-sanctions>
- Llorens, Miguel. 2010. "A Personal Response to Lionbridge VP Didier Hélin's Unilateral Demand of a 5% Discount." Accessed October 30 2019. <http://traductor-financiero.blogspot.com/2010/11/personal-response-to-lionbridge-vp.html>
- Macey, William H., Benjamin Schneider, Karen M. Barbera, Scott A. Young. 2011. *Employee Engagement: Tools for Analysis, Practice, and Competitive Advantage*. Hoboken, NJ: John Wiley & Sons.
- Mallon, Mary. 1998. "The portfolio career: pushed or pulled to it?" *Personnel Review* 27(5): 361-377. <https://doi.org/10.1108/00483489810230316>
- Moniz, Helena. 2019. "Crowdsourcing and Related Tools for Quality Monitoring in Post-Editing Machine Translation." Paper presented at MT Summit 2019, Dublin.
- Moore, Phoebe, Andrew Robinson. 2016. "The quantified self: What counts in the neoliberal workplace." *New Media & Society* 18(11), 2774–2792.
- Moorkens, Joss. 2017. "Under Pressure: Translation in Times of Austerity." *Perspectives*
- Moorkens, Joss. 2020. "Comparative satisfaction among freelance and directly-employed Irish-language translators." *Translation & Interpreting* 12(1), 55-73.



- Moorkens, Joss, Marta Rocchi. Forthcoming. "Ethics in the Translation Industry." In *The Routledge Handbook of Translation and Ethics*, edited by Kaisa Koskinen and Nike K. Pokorn. Abingdon: Routledge.
- O'Brien, Sharon. 2012. "Translation as human–computer interaction." *Translation Spaces* 1, 101–122. doi:10.1075/ts.1.05obr
- Olohan, Maeve, Elena Davitti. 2015. "Dynamics of Trusting in Translation Project Management: Leaps of Faith and Balancing Acts." *Journal of Contemporary Ethnography* 46(4), 391–416.
- Parasuraman, Raja, Thomas B. Sheridan, Christopher D. Wickens. 2000. "A Model for Types and Levels of Human Interaction with Automation." *IEEE Transactions on Systems, Man, and Cybernetics—Part A: Systems And Humans* 30(3), 286–297.
- Parenti, Christian. 2001. "Big Brother's Corporate Cousin." *The Nation*. Accessed October 7 2019. <https://www.thenation.com/article/big-brothers-corporate-cousin/>
- Perrault, Raymond, Yoav Shoham, Erik Brynjolfsson, Jack Clark, John Etchemendy, Barbara Grosz, Terah Lyons, James Manyika, Saurabh Mishra, Juan Carlos Niebles. 2019. "The AI Index 2019 Annual Report." AI Index Steering Committee, Human-Centered AI Institute, California: Stanford University.
- Pidchamook, Wichaya. Forthcoming. "Freelance Subtitlers in a Subtitle Production Network in the OTT Industry in Thailand: A Longitudinal Study." PhD thesis, Dublin City University.
- Pielmeier, Hélène, Paul O'Mara. 2020. The State of the Linguist Supply Chain. CSA-Research. Accessed 24/02/2020. <https://insights.csa-research.com/reportaction/305013106/Toc>
- Popper, Karl. 1970. "The Moral Responsibility of the Scientist". In *Induction, Physics and Ethics*, edited by Paul Weingartner, Gerhard Zeche, 329-336. Dordrecht: Reidel.
- Postman, Neil. 1992. *Technopoly*. London: Penguin Random House.
- Puttock, James. 2018. "Fast Track TV Subtitling: Past, Present and Future." Paper presented at Language and the Media, Berlin October 5 2018.
- Pym, Anthony. 2012. *On Translator Ethics: Principles for Mediation Between Cultures*. Amsterdam: John Benjamins.
- Pym, Anthony, François Grin, Claudio Sfreddo, Andy L. J. Chan. 2012. "The status of the translation profession in the European Union." Luxembourg: European Commission.
- Rodríguez-Castro, Monica. 2016. "Intrinsic and Extrinsic Sources of Translator Satisfaction: An Empirical Study." *Entreculturas* 7-8, 195-229.
- Rodriguez-Castro, Monica. 2015. "Development and Empirical Validation of a Multifaceted Instrument for Translator Satisfaction." *Translation and Interpreting* 7(2), 1-21
- Roettgers, Janko. 2016. "The Technology behind Netflix's 'Chelsea' Talk Show." *Variety*. Accessed October 30 2019. <https://variety.com/2016/digital/news/netflix-chelsea-encoding-ui-translation-1201776469/>

Rubery, Jill. 2013. "From 'women and recession' to 'women and austerity': a framework for analysis." In *Women and Austerity: The Economic Crisis and the Future for Gender Equality*, edited by Maria Karamessini, Jill Rubery, 17-36. Abingdon: Routledge.

Ruokonen, Minna. 2013. "Studying Translator Status: Three Points of View." In *Point of view as Challenge*, edited by Maria Eronen, Marinella Rodi-Risberg, 327–338). Vaasa: Vakki Publications.

Scheiber, Noam, Kate Conger. 2020. "The Great Google Revolt." New York Times. Accessed February 22 2020.  
<https://www.nytimes.com/interactive/2020/02/18/magazine/google-revolt.html>

Sennett, Richard. 1998. *The Corrosion of Character - The Personal Consequences of Work in the New Capitalism*. London: W.W. Norton.

Shreve, Gregory M. 2009. Recipient-Orientation and Metacognition in the Translation Process. In *Translators and their Readers. In Homage to Eugene A. Nida*, edited by Rodica Dimitriu, 255-270. Brussels: Les Editions du Hasard

Silva, Catarina. 2019. "Improving Domain Adaptation for Machine Translation with Translation Pieces." Paper presented at MT Summit 2019, Dublin.

Smil, Vaclav. 2019. *Growth: From Microorganisms to Megacities*. Boston: MIT Press.

Strubell, Emma, Ananya Ganesh, Andrew McCallum. 2019. "Energy and Policy Considerations for Deep Learning in NLP." Paper presented at the 57th Annual Meeting of the Association for Computational Linguistics (ACL). Florence, Italy.

Taylor, Frederick W. 1911. *The Principles of Scientific Management*. New York: Harper and brothers.

Thompson, Edward P. 1967. "Time, Work-Discipline, and Industrial Capitalism." *Past & Present* 38, 56-97.

Timmermans, Job, Bernd Carsten Stahl, Veikko Ikonen, and Engin Bozdog. 2010. "The Ethics of Cloud Computing: A Conceptual Review." In 2010 IEEE Second International Conference on Cloud Computing Technology and Science, 614–20. Indianapolis, IN, USA: IEEE. <https://doi.org/10.1109/CloudCom.2010.59>.

Tinsley, Royal L. 1976. *Translation as a Career Option for Foreign Language Majors*. Washington DC: Bulletin of the Association of Departments of Foreign Languages 7(4).

UN General Assembly. 2015. *Transforming our world: the 2030 Agenda for Sustainable Development*. New York: United Nations.

Wajcman, Judy. 2015. *Pressed for Time: The Acceleration of Life in Digital Capitalism*. Chicago: University of Chicago Press.

Wakabayashi, Daisuke. 2019. "Google Relies On Underclass Of Temp Labor." In New York Times, May 28, 2019, Section A, 1. Accessed December 27 2019.  
<https://www.nytimes.com/2019/05/28/technology/google-temp-workers.html>

Walker, Charles R., Robert H. Guest. 1952. *The man on the assembly line*. Cambridge: Harvard University Press.

Weizenbaum, Joseph. 1986. "Not Without Us." Paper presented at German to the Association of Computer Professionals, West Germany, July 1986. Accessed August 19 2019. [https://freegroups.net/guide/not\\_without\\_us/](https://freegroups.net/guide/not_without_us/)

Wood, Alex J., Mark Graham, Vili Lehdonvirta, Isis Hjorth. 2019. "Networked but Commodified: The (Dis)Embeddedness of Digital Labour in the Gig Economy." *Sociology* 53(5), 931–950.

Zider, Bob. 1998. "How Venture Capital Works." *Harvard Business Review*. November-December 1998.

Zink, Klaus J. 2014. "Designing sustainable work systems: The need for a systems approach." *Applied Ergonomics* 45(1), 126-132.

Zuboff, Shoshana. 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. London: Profile.